Project Report: Photodissociation experiments elucidating the mechanism of anomalous sulfur isotope fractionation

Project Investigator:	***James Lyons***

Project Progress

This project involves collaborative work between James Lyons (UCLA) and James Farquhar at the University of Maryland (UMD). In this work SO_2 photodissociation experiments have been performed with the goal of elucidating the mechanism of anomalous fractionation in sulfur isotopes. Lyons visited UMD in July and November 2003 to participate in two sets of experiments. Results obtained thus far are different from some of the narrowband experiments reported by Farquhar et al. in 2001, and have been reported at Astrobiology Science Conference (AbSciCon) (March 2004) by Lyons et al., and by Wing et al. at Goldschmidt (June 2004). An initial paper describing experimental results is in preparation. Additional experiments are anticipated.

Highlights

- Broadband SO_2 photodissociation experiments yield elemental sulfur with different isotopic behavior than do narrowband experiments. This result is significant because in an actual atmosphere (either modern or Archean) broadband dissociation is expected.

Roadmap Objectives

- ***Objective No. 4.1:*** Earth's early biosphere